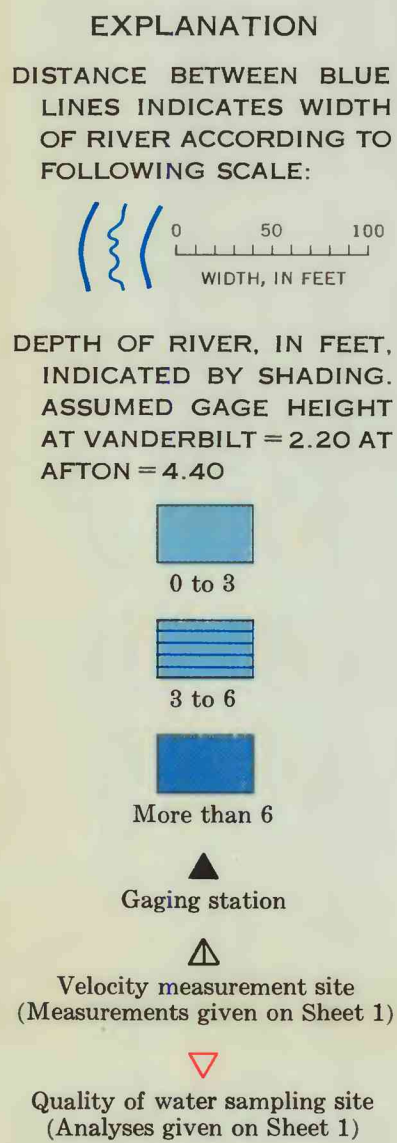


CHANNEL, BED, AND BANKS

The character of channel, bed, and banks of a river strongly influence streamflow characteristics, quality of water, and recreational values. The three maps at right illustrate the physical features of the Pigeon River determined by field reconnaissance in June, 1966. During this reconnaissance the gage height (stage) near Vanderbilt varied from 2.15 to 2.61. The depth and width of stream and apparent height of banks vary with stage. The maps show the width and depth of the stream, the bed and bank materials, and the height of banks, and the character of bank cover. Each of these maps is generalized, showing the predominant character of bed and banks. Small segments of unlike character are not shown. In reaches of river marked predominantly gravel, small segments of sand bottom are common, especially in the deeper pools. Conversely, reaches marked predominantly sand may include small segments of gravel in riffles.

The character of bed and banks may change with time as a result of both natural and man-made events. For example, normal spring floods may remove sand from one part of the river bed and deposit it over gravel beds downstream. The flood on May 15, 1957, resulting from high water and the failure of the Lansing Club dam moved great loads of sand downstream. This same flood removed many log jams and fallen trees and piled them up in larger jams downstream. The character of the channel, bed, and banks, of the Pigeon River and the effects on recreational use are summarized below:

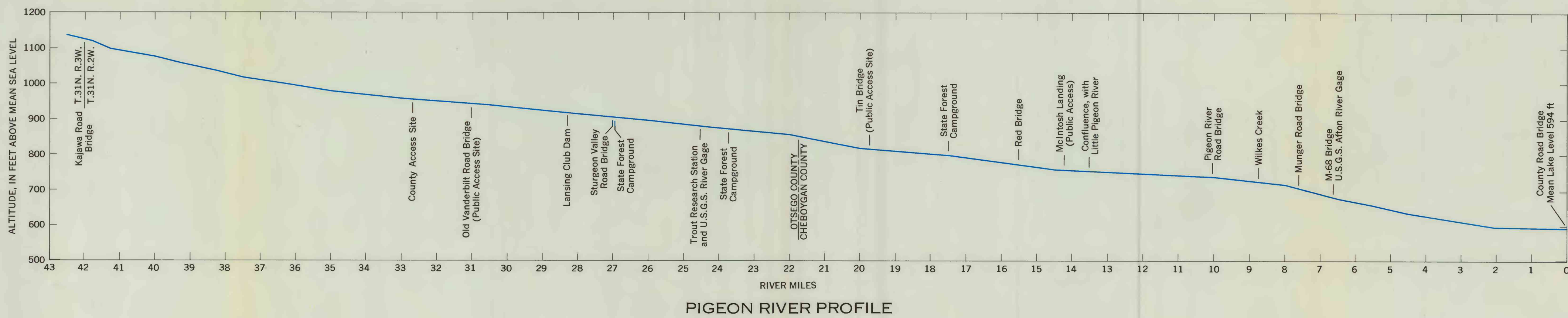
Recreational use	Relation of physical and hydrologic characteristics to recreational use (Prepared by Michigan Department of Conservation)	Characteristics of Pigeon River
Trout fishing	Broad open water makes fly casting easier, but tends to warm the water. Warm water can have adverse effects on trout propagation and population.	Too narrow for easy fly casting in upper reaches. Broad enough downstream from Old Vanderbilt Road Bridge. Broad, open reaches probably contribute to higher water temperatures.
	Variability in depth, usually related to variability in velocity and affects wading. Predominantly shallow depth makes wading easier.	Varied depths and easy wading in most of river.
	Gravel beds provide spawning opportunity and produce fish food. Sand fills deeper holes; buries escape cover, food organisms, and gravel beds.	Gravel beds predominate in upper reaches. Much sand in lower reaches.
	Overhanging banks, logs, fallen trees, and boulders provide trout cover.	Good cover in upper reaches. Lower reaches relatively barren.
	Streamside trees and shrubs shade water and keep water temperature low. This shade may reduce food production, and the plants may intercept part of ground-water discharge to stream.	Tree line the banks of more than 90 percent of river length.
	Clay banks and bottoms produce turbidity, reducing photosynthesis and hence food production. Turbidity also interferes with sight feeding by trout. Sand, gravel, and muck banks more desirable in this respect.	Banks mostly sand and muck. Some clay banks in lower reaches.
	Banks devastated by erosion, undercutting, cattle crossing, and boat landing traffic may add undesirable quantities of sand, silt, and clay to the water.	Most banks unaffected. A few eroded areas near camp sites and bridges.
	Variability in gradient is related to variability in velocity and affects wading.	Stream gradient varies in different reaches of river. Easy wading in most reaches.
	Bottom vegetation adequate to contribute to food production is desirable, but when excessive it chokes stream and produces extreme daily fluctuations in dissolved oxygen and temperature.	Bottom vegetation is moderate, not excessive. Dissolved oxygen within limits for trout propagation and population.
	Boatability increases as width and depth increase.	River too narrow for easy boating in upper reaches. Too shallow in riffles in many reaches.
	On smaller streams sweepers and log jams decrease boatability. Obstructions, shallows, boulders objected to by some canoeists, welcomed by others. If present in excessive amounts, may eliminate boating.	Obstructions, chiefly fallen trees and log jams, require portages in most reaches.
Boating	A meandering stream is more attractive and interesting than a straight stream.	River is meandering in most reaches.
	Variety of streamside vegetation adds to interest.	Streamside vegetation variable. Coniferous trees predominate in upper reaches, hardwoods in lower.
	Alternating high and low banks add to interest.	Banks are mostly low, but some high banks in lower reaches.
	Undeveloped river banks add to enjoyment of most canoeists.	Cabins are few and scattered for most of river length.
	Frequency and suitability of boat launching and take-out points, as determined by bank characteristics and vegetation, influence usability.	Low sandy banks, not densely vegetated, provide many easy launching and take-out points.
Camping and cabin living	Characteristics favorable to fishing and boating generally also desirable for camping and cabin living.	See descriptions above.
	Moderately high sandy slopes provide good drainage and easy access to river.	About one fourth of river frontage is moderately high and sandy. Remainder is low mudland or too high for easy access.



MAP 1—WIDTH AND DEPTH OF CHANNEL

MAP 2—BED AND BANK MATERIALS

MAP 3—HEIGHT OF BANKS AND BANK VEGETATION



RECONNAISSANCE OF THE PIGEON RIVER, A COLD-WATER RIVER IN THE NORTHCENTRAL PART OF MICHIGAN'S SOUTHERN PENINSULA

By
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